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EXAMINER	
REGO, DOMINIC E	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,544	PARAMESH ET AL.	
	Examiner	Art Unit	
	Dominic E. Rego	2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,9-13 and 15-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,9,11-13,15 and 17-24* is/are rejected.

7)☒ Claim(s) *10 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

1. Claims 10, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 10 and 16, the prior art of record fails to teach the apparatus, wherein the antenna receiver comprises:

a radio frequency (RF) to intermediate frequency (IF) quadrature downconverter to receive a combined antenna weighted radio frequency (RF) real signal from said first adder and a combined antenna weighted radio frequency (RF) imaginary signal from said second adder, and to output an in-phase portion and a quadrature portion of an intermediate frequency (IF) signal; and

an intermediate frequency (IF) to baseband downconverter operably coupled to said radio frequency (RF) to intermediate frequency (1F) quadrature downconverter to downconvert said in-phase portion and said guadrature portion of said intermediate frequency signal to an in-phase portion and a quadrature portion of a baseband signal.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,11,17,18, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Martin et al. *(US Patent Application Publication #20010009861)*.

Regarding claim 1, Martin teaches an apparatus comprising:

two or more antennas to receive modulated radio frequency (RF) signals *(Figure 4, antennas 31-3N to receive modulated radio frequency (RF) signals)*; and

an antenna receiver coupled to said two or more antennas *(Figure 4, elements 41-1 to 41-N are an antenna receiver coupled to two or more antennas),* the antenna receiver including at least one antenna weighted value generator to provide an antenna weighted value to said modulated radio frequency (RF) signals received from said two or more antennas *(Figure 4, 41-1 to 41-N are weighted valued generator to provide an antenna weighted value to modulated radio RF signals)*,

wherein said at least one antenna weighted value generator *(Figure 4, elements 41-1 to 41-N)* is able to generate said antenna weighted value *(weighting coefficients)* by manipulating a first value derived from an amplitude of the modulated radio frequency (RF) signals and a second value derived from a phase of the modulated radio frequency (RF) signals *(Paragraphs 0013,0028, and 0029)*.

Regarding claim 11, Martin teaches an apparatus comprising:

two or more dipole *(Paragraph 0008)* antennas to receive two or more modulated radio frequency (RF) signals *(Figure 4, antennas 31-3N to receive modulated radio frequency (RF) signals)*; and

an antenna receiver coupled to said two or more antennas *(Figure 4, elements 41-1 to 41-N are an antenna receiver coupled to two or more antennas)*, the antenna receiver including at least two antenna weighted value generators to provide antenna weighted values to the two or more modulated radio frequency (RF) signals received at the two or more antennas *(Figure 4, 41-1 to 41-N are weighted valued generator to provide an antenna weighted value to modulated radio RF signals)*, respectively,

wherein at least one of said two or more antenna weighted value generators *(Figure 4, elements 41-1 to 41-N)* is able to generate a first antenna weighted value *(weighting coefficients)* based on a manipulation of a first value derived from an amplitude of the two or more modulated radio frequency (RF) signals and a second antenna weighted value derived from a phase of the two or more modulated radio frequency (RF) signals *(Paragraphs 0013,0028, and 0029)*.

Regarding claim 17, Martin teaches a communication system comprising:

a first communication device *(Figure 1, elements 11-1)* to transmit a plurality of modulated radio frequency (RF) signals over a plurality of channels;

a second communication device to receive the plurality of modulated radio frequency (RF) signals by a plurality of antennas *(Figure 4, elements 31-3N)* operably coupled to an antenna receiver *(Figure 4, elements 41-1 to 41-N)* having a radio frequency (RF) section to provide antenna weighted values to the modulated radio frequency (RF) signals *(Paragraph 0028)* and to produce antenna weighted radio frequency (RF) signals, a radio frequency (RF) to an intermediate frequency (IF)

quadrature downconverter to downconvert the antenna weighted radio frequency (RF) signals to an antenna weighted intermediate frequency (IF) signal *(Paragraph 0029)* and an intermediate frequency (IF) to baseband downconverter to downconvert said antenna weighted intermediate frequency (IF) signal to an antenna weighted baseband signal *(Paragraph 0033)*.

Regarding claim 18, Martin teaches the communication system, wherein the radio frequency (RF) section of the antenna receiver *(Figure 4, elements 41-1 to 41-N)* comprises:

a plurality of antenna weighted value generators operably coupled to the plurality of antennas *(Figure 4, a plurality of antenna weighted value generators 41-1 to 41-N coupled to the plurality of antennas 31-3N)* and wherein an antenna weighted value generator of the plurality of the antenna weighted value generators is able to provide an antenna weighted value to the plurality of modulated radio frequency (RF) signals *(Figure 4, 41-1 to 41-N are weighted valued generator to provide an antenna weighted value to modulated radio RF signals)* based on a manipulation of a first value derived from an amplitude of a received modulated radio frequency (RF) signal received by an antenna of the plurality of antennas and a second value derived from a phase of the received modulated radio frequency (RF) signal *(Paragraphs 0013,0028, and 0029)*.

Regarding claim 22, Martin teaches a method comprising: receiving a plurality of modulated radio frequency (RF) signals by two or more antennas *(Figure 4, antennas 31-3N to receive modulated radio frequency (RF) signals)*;

determining antenna weight values based on channel estimated information; weighting said plurality of modulated radio frequency (RF) signals by adjusting an amplitude and a phase of the plurality of modulated radio frequency (RF) signals according to the antenna weight values *(Paragraph 0028)*; and

combining the plurality of weighted signals to provide an antenna weighted radio frequency (RF) signal *(Figure 4, 41-1 to 41-N are weighted valued generator to provide an antenna weighted value to modulated radio RF signals; Paragraph 0029)*.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. *(US Patent Application Publication #20010009861)* in view of Kinoshita et al. *(US Patent #6,430,215)*.

Regarding claims 2 and 12, Martin teaches all the claimed elements in claim 1, except for the apparatus, wherein the at least one antenna weighted value generator

comprises: a first variable amplifier to adjust an amplitude of the modulated radio frequency (RF) signals and to output amplitude adjusted modulated radio frequency (RF) signals; and second and third variable amplifiers operably coupled to the first amplifier to adjust the phase of the amplitude adjusted modulated radio frequency (RF) signal.

However, in related art, Kinoshita teaches the apparatus, wherein the at least one antenna weighted value generator comprises: a first variable amplifier to adjust an amplitude of the modulated radio frequency (RF) signals and to output amplitude adjusted modulated radio frequency (RF) signals; and second and third variable amplifiers operably coupled to the first amplifier to adjust the phase of the amplitude adjusted modulated radio frequency (RF) signal *(Col 6, line 45-67).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the teaching of the apparatus, wherein the at least one antenna weighted value generator comprises: a first variable amplifier to adjust an amplitude of the modulated radio frequency (RF) signals and to output amplitude adjusted modulated radio frequency (RF) signals; and second and third variable amplifiers operably coupled to the first amplifier to adjust the phase of the amplitude adjusted modulated radio frequency (RF) signal, as taught by Kinoshita, in the Martin device, in order to minimize the influence of delay wave having delay time smaller than chip time width of the diffusion signal (Kinoshita, Col 6, line 64-65).

Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. *(US Patent Application Publication #20010009861)* in view of Kinoshita et al. *(US Patent #6,430,215)* and further in view of DeWulf *(US Patent #6,590,528).*

Regarding claims 3 and 13, the combination of Martin and Kinoshita teaches all the claimed elements in claim 2, except for the apparatus, wherein the second variable amplifier is able to provide a real portion of the phase of the antenna weighted value and the third variable amplifier is able to provide an imaginary portion of the phase of the antenna weighted value.

However, in related art, Kinoshita teaches the apparatus, wherein the second variable amplifier is able to provide a real portion of the phase of the antenna weighted value and the third variable amplifier is able to provide an imaginary portion of the phase of the antenna weighted value *(Col 4, line 8-22).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the teaching of the apparatus, wherein the second variable amplifier is able to provide a real portion of the phase of the antenna weighted value and the third variable amplifier is able to provide an imaginary portion of the phase of the antenna weighted value, as taught by DeWulf, in the combination of Martin and Kinoshita device in order to produce an output signal with reduced interfering signal levels.

Claims 9,15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. *(US Patent Application Publication #20010009861)* in view of DeWulf *(US Patent #6,590,528).*

Regarding claims 9,15, and 19, Martin teaches the apparatus, wherein the antenna receiver comprises first and second antenna weighted value generators to provide first and second antenna weighted values *(Figure 4, elements 41-1 to 41-N are weight value generator to provide to provide weight values to the received modulated signal)*, respectively except for the apparatus further comprising:

a radio frequency (RF) section which includes said first antenna weighted value generator to output a pair of first real and first imaginary antenna weighted radio frequency (RF) signal components said second antenna weighted value generator to output a pair of second real and second imaginary antenna weighted radio frequency (RF) signal components, a first adder to combine the first and second real radio frequency (RF) signal components and a second adder to combine the first and second imaginary radio frequency (RF) signal components.

However, in related art, DeWulf teaches the apparatus further comprising:

a radio frequency (RF) section which includes said first antenna weighted value generator (*Figure 1, W1)* to output a pair of first real and first imaginary antenna weighted radio frequency (RF) signal components *(Col 4, line 8-22)* said second antenna weighted value generator *(Figure 1, W2)* to output a pair of second real and second imaginary antenna weighted radio frequency (RF) signal components *(Col 4,*

line 8-22), a first adder to combine the first and second real radio frequency (RF) signal components and a second adder to combine the first and second imaginary radio frequency (RF) signal components *(Col 4, line 20-22).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the teaching of the apparatus further comprising:

a radio frequency (RF) section which includes said first antenna weighted value generator to output a pair of first real and first imaginary antenna weighted radio frequency (RF) signal components said second antenna weighted value generator to output a pair of second real and second imaginary antenna weighted radio frequency (RF) signal components, a first adder to combine the first and second real radio frequency (RF) signal components and a second adder to combine the first and second imaginary radio frequency (RF) signal components, as taught by DeWulf, in the Martin device in order to intensify the desired signal and to cancel or reduce the interference signal and noise at the combining output.

Claims 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. *(US Patent Application Publication #20010009861)* in view of Callaway, JR et al. *(US Patent Application Publication #20020186750).*

Regarding claims 20 and 23, Martin teaches all the claimed elements in claim 19, except for the communication system, wherein the radio frequency to an intermediate frequency quadrature downconverter of the antenna receiver is able to

provide an in-phase portion and a quadrature portion of an intermediate frequency signal.

However, in related art, Callaway teaches the communication system, wherein the radio frequency to an intermediate frequency quadrature downconverter of the antenna receiver is able to provide an in-phase portion and a quadrature portion of an intermediate frequency signal (Paragraph 0091).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the teaching of the communication system, wherein the radio frequency to an intermediate frequency quadrature downconverter of the antenna receiver is able to provide an in-phase portion and a quadrature portion of an intermediate frequency signal, as taught by Callaway, in the Martin device in order to reduce the interference of the signals.

Claims 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. *(US Patent Application Publication #20010009861)* in view of Callaway, JR et al. *(US Patent Application Publication #20020186750)* and further, in view of Eriksson et al. *(US Patent Application Publication #20030083031).*

Regarding claims 21 and 24 the combination of Martin and Callaway teach all the claimed elements in claim 20 and 23, except for the communication system, wherein the intermediate frequency to a base band frequency downconverter of the antenna

receiver is able to provide a real portion and an imaginary portion of a base band frequency signal.

However, in related art, Eriksson teaches the communication system, wherein the radio frequency to an intermediate frequency quadrature downconverter of the antenna receiver is able to provide an in-phase portion and a quadrature portion of an intermediate frequency signal (Paragraph 0042).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the teaching of the communication system, wherein the intermediate frequency to a base band frequency downconverter of the antenna receiver is able to provide a real portion and an imaginary portion of a base band frequency signal, as taught by Eriksson, in the combination of Martin and Callaway device in order to balance sensitivity/accuracy in electronic components *(Eriksson, Paragraph 0002)*.

Response to Arguments

5. Applicant's arguments with respect to claims 1,11,17, and 22 have been considered but are moot in view of the new ground(s) of rejection.

Since applicant amended the above claims, the examiner also had to change the reference from Aoyama to Martin which teaches all the claimed limitations that the applicant claimed. Regarding claims 1, 11, 17, and 22, Martin teaches an apparatus comprising: two or more dipole *(Paragraph 0008)* antennas to receive two or more modulated radio frequency (RF) signals *(Figure 4, antennas 31-3N to receive modulated radio frequency (RF) signals)*; and an antenna receiver coupled to said two

or more antennas *(Figure 4, elements 41-1 to 41-N are an antenna receiver coupled to two or more antennas)*, the antenna receiver including at least two antenna weighted value generators to provide antenna weighted values to the two or more modulated radio frequency (RF) signals received at the two or more antennas *(Figure 4, 41-1 to 41-N are weighted valued generator to provide an antenna weighted value to modulated radio RF signals)*, respectively, wherein at least one of said two or more antenna weighted value generators *(Figure 4, elements 41-1 to 41-N)* is able to generate a first antenna weighted value *(weighting coefficients)* based on a manipulation of a first value derived from an amplitude of the two or more modulated radio frequency (RF) signals and a second antenna weighted value derived from a phase of the two or more modulated radio frequency (RF) signals *(Paragraphs 0013,0028, and 0029)*. For dependent claims 2,3,12,13,15,19,20,23,21,and 24, see claims rejection for more details.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Dominic E. Rego

NAY MAUNG
SUPERVISORY PATENT EXAMINER